



## SCIENCE, SOCIETY AND CITIZENS: SUGGESTIONS (AND HOPES) ON HOW TO FOSTER RRI IN HORIZON EUROPE

### A key moment for European science policy

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#### Abstract

We argue that the commitment to science-society integration and Responsible Research and Innovation in past European framework programmes has already made considerable progress in better aligning research and innovation with European societies. The framework programmes have important socialisation effects and recent research point to positive trends across key areas of Responsible Research and Innovation within academic organisations. What appears to be a step away from the concerted efforts to facilitate European citizens' meaningful contribution to research and innovation in the upcoming Horizon Europe framework programme seems counter-productive and poorly timed.

#### Keywords

Participation and science governance

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A common thread that has run through two decades of European framework programmes (FPs) for research and innovation (R&I) funding, up to and including the current Horizon 2020, has been a dedicated line of support for connecting science to the values and interests of European citizens. Most recently under the work program Science with and for Society (SwafS), considerable investments have been made in projects designed to link R&I to the constellations of societal stakeholders who rely on and benefit from excellence in science and technology. These projects have sought to integrate diverse sets of actors to co-create and implement common R&I agendas through an array of different methods and based on a commitment to cultivate responsibility in the context of research and innovation. The portfolio of research projects and coordination activities has also succeeded in building an evidence base about the science-society relationship. At a time of increased concern about lack of trust in science and concerted efforts to undermine the status of expert knowledge, institutionalising mechanisms to

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This commentary extends our argument published as a Letter-to-the-Editor of *Science* on August 24, 2018 [Mejlgaard et al., 2018].

include citizens in the conduct and governance of science and innovation seems more vital than ever.

The aim of SwafS has been both to progressively align R&I in Europe with citizens' expectations and to deepen the opportunities for scientific modes of citizenship in the Member States (MS) of the European Union (EU). Investments in science, research and innovation drive socio-economic development and employment. Supporting informed and engaged citizenship is therefore essential both for the upstream shaping of what R&I delivers to society and to develop the capacities of citizens to fully participate in and maximise the benefits of R&I. Carlos Moedas, the current Commissioner for R&I in Europe, has consistently voiced his support for citizen science and a preference for an open model of science that brings stakeholders more fully into the fold of R&I. The recent high level expert group report chaired by former Commissioner for Trade Pascal Lamy on the impact of EU research and innovation programmes emphasized the ongoing need for specific actions to mobilize and include citizens and to continue to build the knowledge base on what works [European Commission, 2017]. And, as we describe below, there is mounting evidence that investments in aligning science with society are having beneficial effects.

Yet the draft plans for the next multiannual FP, Horizon Europe, contain neither a continuation of SwafS nor a new dedicated work program with similar objectives. Rather, support for citizen science, co-creation, gender equality and ethics, are subsumed as 'broad lines' under R&I policy measures designed to help strengthen the European Research Area [European Commission, 2018a]. Opportunities to establish and enhance connections and cross-currents between science and society may be foreseen as complementary aims within work programs with bold scientific, technological and challenge-oriented goals.

This is a surprise, particularly when one considers how the context for Horizon Europe is described in the program proposal:

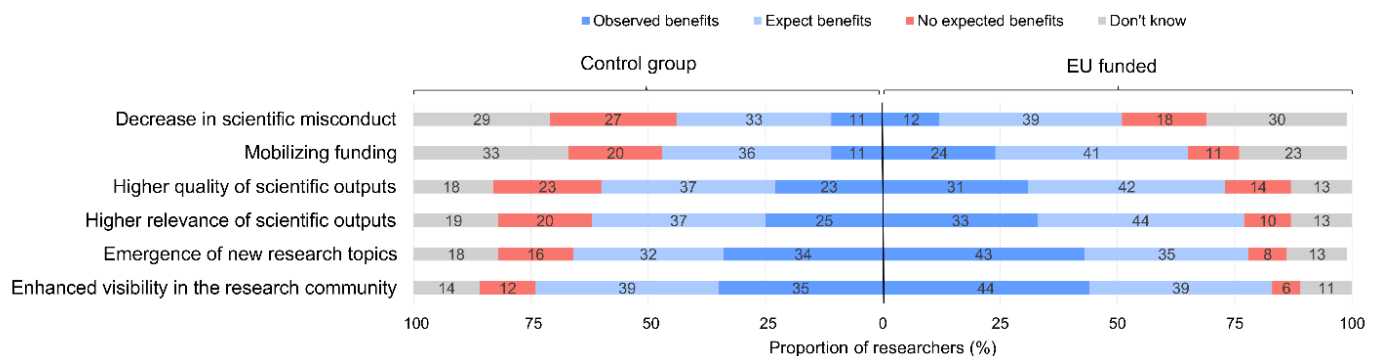
... research and innovation are seen by some as distant and elitist without clear benefits for citizens, instilling attitudes that hamper the creation and uptake of innovative solutions, and scepticism about evidence-based public policies. This requires both better linkages between scientists, citizens and policy-makers and more robust approaches to pooling scientific evidence itself... where the outcomes of research and innovation are understood and trusted by informed citizens and benefit society as a whole [European Commission, 2018a, p. 74–75].

The scope and severity of the challenge to scientific legitimacy is acknowledged, as is the necessity for informed and involved citizens if the impacts of R&I are to be maximised. Yet, as stakeholders in the science and society community have voiced in launching an effort to [save SwafS](#), Horizon Europe appears to step away from the concerted efforts to facilitate European citizens' meaningful contribution to R&I that were a feature of past FPs. This seems counter-productive and poorly timed. The proposed direct focus on societal challenges, scientific missions and citizens' needs demands a targeted approach designed to exploit the existing knowledge base and relationships with civil society that have been so assiduously built

through SwafS and its predecessors — primed by a renewed commitment to extend engagement with the broadest possible spectrum of social stakeholders.

One area of particular concern in plans for Horizon Europe is the absence of support for the continued institutionalisation of responsible research and innovation (RRI), an area in which Europe has been taking global leadership. The 2014 Rome Declaration on RRI in Europe described RRI as the process of aligning research and innovation to the values, needs and expectations of society and advocated integration into EU research and innovation policy.<sup>1</sup> The Declaration both demonstrated a maturing of the concept and foreshadowed a constructive future for RRI, building on the important work conducted through EU funded projects and the local, regional and national efforts to shape R&I for the improvement of European societies [Owen, Macnaghten and Stilgoe, 2012].

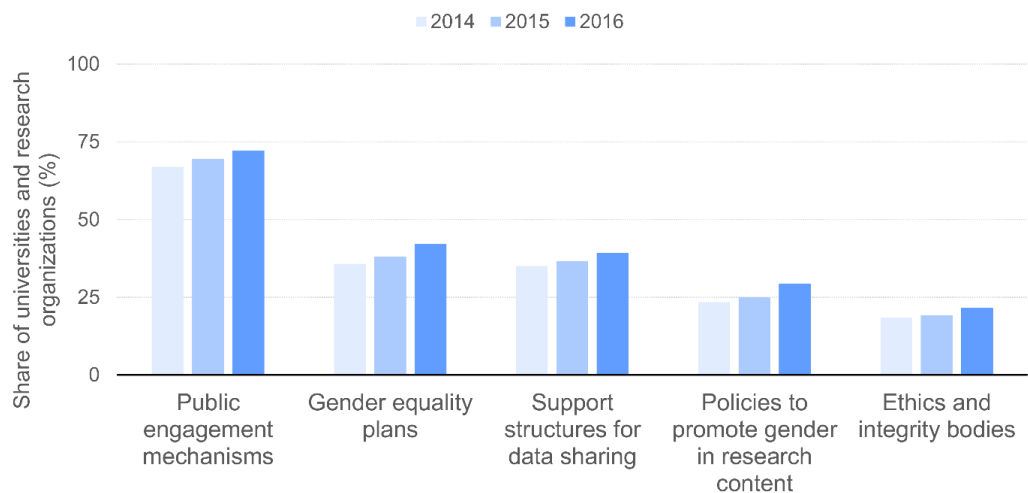
Our recent research focused on tracking the evolution and benefits of RRI produced concrete evidence that the considerable effort made to cultivate RRI is having important effects [Peter et al., 2018]. First, we can clearly observe that participating in FP research projects promotes a greater familiarity with RRI principles within the European research community. Researchers who have participated in FP research projects are more likely to employ responsible practices in their own work, and they are more likely to identify democratic, social, or economic benefits for stakeholders beyond the R&I system. Importantly, compared to a control group of non-EU funded researchers, they are also more likely to observe that their science improves by being responsible, or to have strong expectations that such benefits will emerge in the future. Perceptions of scientific benefits catalysed by RRI are summarised in Figure 1.



**Figure 1.** European researchers' perception of scientific benefits of RRI. Findings based on survey-responses from 3117 EU-funded researchers and 1264 responses from a control group of non-EU funded researchers. For details on sampling, response rates and questionnaire design, see [here](#) [i.e. Bühner et al., 2017].

<sup>1</sup>The Rome Declaration states that “[T]he benefits of Responsible Research and Innovation go beyond alignment with society: it ensures that research and innovation deliver on the promise of smart, inclusive and sustainable solutions to our societal challenges; it engages new perspectives, new innovators and new talent from across our diverse European society, allowing to identify solutions which would otherwise go unnoticed; it builds trust between citizens, and public and private institutions in supporting research and innovation; and it reassures society about embracing innovative products and services; it assesses the risks and the way these risks should be managed”.

Second, in addition to these observations concerning the socialising effects of the FPs on individual researchers, the available evidence on the process of RRI mainstreaming in academic organisations suggests that there is a positive trend of growth and development in all RRI key areas: gender equality, open access, science literacy and education, public engagement and ethics. The transformative potential of RRI is starting to materialise in the shape of new governance arrangements in academic organisations. From 2014 to 2016 a growing share of European universities and research organisations promoted open data sharing, expanded their outreach and engagement activities, developed gender equality plans and established research ethics committees and research integrity offices. Overall, the institutional commitment to cultivating responsible practices showed a positive trend, which is captured in Figure 2.



**Figure 2.** Trends in selected indicators of RRI across European universities and research organisations. Findings based on survey-responses from 259 universities and 208 public research organisations. To see the full range of RRI indicators, click [here](#) [i.e. European Commission, 2018b] and details on sampling of institutions, response rates and questionnaire design can be retrieved [here](#) [i.e. European Commission, 2018c].

Third, it is evident that different European countries are experimenting with RRI and developing it in ways that suit them best, whilst maintaining a strong shared commitment. Our monitoring data reveals traits that are distinctive for individual countries, but also clusters of countries with shared priorities and practices in the development of RRI [Mejlgaard, Bloch and Bargmann Madsen, 2018]. Knowledge about patterns of similarities and differences opens up avenues for learning between countries. The development and sharing of knowledge about new practices, procedures and ways of thinking about responsibility — not least through FP projects — has built new professional communities around RRI. These communities of researchers, administrators, policymakers and publics, share core understandings and principles regarding responsibility whilst retaining sufficient latitude for Member States to order their own priorities on this common pathway.

We would argue that the accumulated evidence demonstrates that RRI has already made considerable progress in better aligning R&I with European societies. A shared knowledge base has been built. Active communities of diverse stakeholders are in place and working to advance RRI in the interests of broad mutual benefits. It is somewhat dismaying, then, to find that plans for Horizon Europe do not

include specific provisions and mechanisms to continue the integration of science, stakeholder communities and citizens' initiatives. In the context of turbulent times, where vital shared values are again under challenge to prove their worth, citizens' involvement and stakeholder inclusion across the full research cycle [Olmos-Peñuela, Benneworth and Castro-Martínez, 2015] seems crucial for conjoint democratic, societal and scientific progress. Conversely, again allowing R&I to drift away from the hands, minds and lives of European citizens is a dangerous gamble. To put this risk into budgetary perspective, the most recent SwafS program costs 462 million euros, which amounted to just 0.6% of the total budget for Horizon 2020 [European Commission, 2013].

It is always tempting to bet everything on science and innovation's undoubted capacities to produce new knowledge and technologies to solve societal challenges, create better jobs and boost health, sustainability and welfare. But the governance of science and technology is never simply a technical issue. If we do not give European citizens a stake in a future for which science and innovation will be increasingly important, science and innovation will be misaligned with what the continent and the world needs. This is why plans for Horizon Europe must be re-thought — this is no time for science to turn its back on society.

## Competing interests

The authors wish to declare that they have in the past been or are currently beneficiaries of the European FPs for science-society integration.

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